FIELD EFFECT TRANSISTOR WITH STRESSED CHANNEL AND METHOD FOR MAKING SAME

ABSTRACT OF THE DISCLOSURE

Field effect transistor with increased charge carrier mobility due to stress in the current channel 22. The stress is in the direction of current flow (longitudinal). In PFET devices, the stress is compressive; in NFET devices, the stress is tensile. The stress is created by a compressive film 34 in an area 32 under the channel. The compressive film pushes up on the channel 22, causing it to bend. In PFET devices, the compressive film is disposed under ends 31 of the channel (e.g. under the source and drain), thereby causing compression in an upper portion 22A of the channel. In NFET devices, the compressive film is disposed under a middle portion 40 of the channel (e.g. under the gate), thereby causing tension in the, upper portion of the channel. Therefore, both NFET and PFET devices can be enhanced. A method for making the devices is included.